REMARKS

Reconsideration of the subject application is respectfully requested. Claims 72 and 73 were rejected under 35 U.S.C. 112, fourth paragraph. These claims have been rewritten as new independent Claims 78 and 79, respectively, to overcome this ground of rejection.

Claims 63-64, 69-73, 77 and 77 were rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 4,987,897 (hereinafter "Funke"), in view of U.S. Patent No. 5,680,241 (hereinafter "Sakanaka"). This rejection is respectfully traversed.

Each of independent Claims 63, 64, 71, 78 (controlling device part), and 79 (physiological function assisting device part) recites, in part, a transmitting means for transmitting light whose polarization state is modulated on the basis of a signal (the signal representing a detected state or a control signal) and a receiving means for receiving and demodulating the light to extract the signal included in the light. Independent Claims 63 and 71 further recite, in part, a detecting means for detecting an internal state of a living body and for generating a signal representing the detected state, and independent Claim 64 further recites, in part, a physiological function assisting means for assisting a function of a living body on the basis of the control signal. In other words, the present application uses polarization-modulation scheme in optical communication in a living body.

It is respectfully submitted that the present invention as claimed is fundamentally different from Sakanaka, which discloses a transmitter/receiver for optical communication. An object of the invention of Sakanaka is to provide an optical communication system in which low energy light is utilized to avoid damage to the eye. The system is further designed to minimize absorption of utilized light in the atmosphere during optical communication operation.

Referring to the second embodiment of Sakanaka (shown in Fig. 16), polarization planes of transmitted and received light in a communication operation are caused to differ from one another by 90 degrees. Specifically, a polarization beam splitter is employed to divide transmitted light and received

light. However, the purpose of such alignment, as described in the patent beginning at column 17, line 28, is to "permit two-way communication in the atmosphere", i.e. simply to prevent cross-talk between two channels. In other words, in Sakanaka polarizations are made different between two channels, but data is not exchanged by means of a polarization modulation scheme employed in each channel.

Referring to the first embodiment of Sakanaka et al. (shown in Fig. 15), it is apparent that there is disclosed a circuit for controlling the energy output of a laser so as to enable communication to be carried out by modulating an intensity of light used. However, there is no disclosure or suggestion of the important feature of the present invention of modulating/demodulating polarized light to effect data exchange.

With regard to Funke, Funke discloses a system for communication between a device implanted in a living body, such as a heart pacemaker, and a device provided outside the body. Specifically, in Funke, a transmitter and receiver are provided in each of a pacemaker and an outside device. Communication between the respective devices is effected by utilizing an electromagnetic wave having a wavelength of 10-100kHz. While use of an electromagnetic wave in a living body is unlikely to be subject to interference within a body, it is likely to be subject to interference by electronic appliances outside a living body, which are widely used and encountered. As a result, communication effected by a carrier wave of such wavelength suffers from unreliability.

In the present invention, since visible or near visible light is utilized, the problem of communication interference caused by widely used electronic devices is avoided. Namely, unreliable communication that occurs as a result of interference in systems such as Funke, is avoided in the present invention.

In view of the foregoing, it will be apparent that neither Sakanaka nor Funke discloses nor teaches either the important characteristics or effects of the present invention. Further, a person skilled in the art would find no motivation to combine Funke and Sakanaka since Sakanaka is for long range

communication (see col. 1, lines 8-12, "communication between remote places") and Funke is for communication between two or more modules implanted in a patient's body or between one implanted module and skin electrodes (please see the Abstract, for example).

It is to be further noted that the technical fields of Sakanaka and present invention are entirely different. The transmitter/receiver of Sakanaka is intended for use in long-distance optical communication. In contrast, the present invention is intended for use in the field of medical appliances specifically, for use in short-range optical communication in a living body acting as a transmission medium.

The dependent claims recite yet additional novel features and are patentable for at least the same reasons as stated above with reference the independent claims.

In view of the foregoing amendments and remarks, applicants respectfully request favorable reconsideration of the present application.

Respectfully submitted,

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